IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Peter D. Swartz	)	
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Application Serial No.:	)	Expected Group Art Unit: 2614
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Filing Date:	)	
	)	Expected Examiner:
Attorney Docket No.: YCF15302	)	David E. Harvey
	)	
Title:	)	
Film Source Video Detection	)	
	)	
Preliminary Amendment	)	
	)	

San Francisco, California 94108
February 9, 2001

Commissioner for Patents
Washington, D.C. 20231

Sir:

This Preliminary Amendment is being filed with a Request for Filing a Divisional Application under 37 CFR 1.53(b). Please enter this amendment to the claims prior to calculating the filing fee.

Please add the attached Abstract of the Disclosure to the application after the claims on a separate sheet of paper.

Please amend the application as follows:

In the Specification

Page 1, prior to line 1 insert - -This application is a division of application S.N.09/440,678, which is, in turn, a division of application S.N. 08/948,841, now U.S. Patent 6,014,182.- -

Page 12, line 8, delete "the";

Page 20, line 19, change "occurred" to --occurs--;

Page 20, line 20, change "caused" to --causing--;

Page 20, line 21, change "had" to --has--;

Page 21, line 1, insert --is broken-- after "pattern" (first occurrence);

Page 24, line 11, delete the indentation (so that the sentence becomes part of the previous paragraph).

Page 24, line 13, begin the sentence with an indentation (so that the sentence begins a new paragraph);

Page 25, line 16, insert --vertical-- after "similar";

Page 26, line 4, change "F0 - (F1+½H)" to --F0 - (F1-½H)--;

In the Claims

Cancel claims 1-11 and add new claims 12-20 as follows:

12. A field motion detector for generating a field motion detection signal from information contained in fields of opposite parity of a 2-1 interlaced format video signal having an input receiving the video signal (F0) from a source, a first delay delaying the video signal at the input by one field period less one half of one scanning line period and providing a first delayed output (F1-½H), a second delay delaying the video signal at the input by one field period plus one half of one scanning line period and providing a second delayed output (F1+½H), a first subtractor subtracting the first delayed output from the video signal to provide a first difference, a second subtractor subtracting the second delayed output from the video signal to provide a second difference, a keep smaller absolute value comparator selecting and providing, as an output indicator of field motion, the magnitude of field motion the smaller of the first difference and the second difference, the improvement characterized by

a single line vertical differentiator responsive to vertical transitions within a field, providing an output indicative of vertical energy,

a comparator comparing the magnitude of field motion from said keep smaller absolute

value comparator to the vertical energy from said single line vertical differentiator, and

a switch controlled by said comparator such that the detector provides as its output an indication of field motion, the magnitude of the field motion taken from the output of said keep smaller absolute value comparator when the field motion magnitude is greater than said vertical energy magnitude, and provides as its output an indication of no field motion when the vertical energy magnitude is greater than the field motion magnitude.

13. The field motion detector of claim 12 wherein said single line vertical differentiator comprises a third subtractor subtracting the first delayed output from the second delayed output to provide a third difference, said third difference constituting an output indicative of vertical energy.

14. A motion detector for generating a frame motion detection signal from information contained in successive frames of a 2-1 interlaced format video signal, the detector having an input receiving the video signal (F0) from a source, a delay delaying the video signal at the input by one frame and providing a frame delayed output (F1), and a subtractor subtracting the delayed video signal from the video signal providing a frame motion signal, the improvement characterized by

a horizontal low pass filter receiving the frame motion signal and outputting a horizontally low pass filtered frame motion signal,

a first rectifier rectifying said horizontally low pass filtered frame motion signal,

a first threshold removing components in the rectified horizontally low pass filtered frame motion signal below a threshold level, outputting a first filtered, rectified and thresholded signal,

a horizontal high pass and vertical high pass filter receiving the frame motion signal and outputting a horizontally high pass and vertically high pass filtered frame motion signal,

a second rectifier rectifying said horizontally high pass and vertically high pass filtered frame motion signal,

a second threshold removing components in the rectified horizontally high pass and vertically high pass filtered frame motion signal below a threshold level, outputting a second filtered, rectified and thresholded signal,

a horizontal high pass and vertical low pass filter receiving the frame motion signal and outputting a horizontally high pass and vertically low pass filtered frame motion signal,

a third rectifier rectifying said horizontally high pass and vertically low pass filtered frame motion signal,

a third threshold removing components in the rectified horizontally high pass and vertically low pass filtered frame motion signal below a threshold level, outputting a third filtered, rectified and thresholded signal, and

an additive combiner adding the first, second and third filtered, rectified and thresholded signals outputting a modified frame motion signal less influenced by subcarrier signal components.

15. The motion detector of claim 14 wherein said second threshold detector has a threshold level such that substantially all color subcarrier signal components are below its threshold.

16. The motion detector of claim 14 or claim 15 further comprising expanders expanding the modified motion signal horizontally, vertically and temporally.

17. A film detector for detecting 25 frame/second sources in PAL television signals or for detecting 30 frame/second sources in NTSC television signals, the detector receiving a field motion signal indicating motion from interlaced field to interlaced field, comprising

an accumulator responsive to said field motion signal and outputting an indication of motion during an entire field,

a field delay responsive to the accumulator output outputting a one field delayed accumulator output,

a comparator responsive to the accumulator output and the field delay output, the comparator comparing the current field motion indicated by the accumulator output to the last field motion indicated by the accumulator output delayed by one field by said field delay, the comparator outputting a binary signal having a first sense when the current field motion (B) is greater than the last field motion (A) and a second sense when the current field motion is less than or equal to the last field motion,

an operator responsive to the accumulator output and the field delay output, the operator outputting a signal indicative of the ratio of present field motion to adjacent field motion,

a threshold responsive to the operator output, having its threshold set by a minimum motion ration signal, and outputting a binary signal having one sense when the ratio of present field motion to adjacent field motion is above the threshold level and a second sense otherwise,

an AND gate receiving the outputs of said comparator and said threshold, said AND gate outputting the comparator output when the threshold output is in said one sense, and

a pattern detector receiving the output of said AND gate for determining the occurrence of a predetermined pattern of moving and non-moving fields.

18. The film detector of claim 17 wherein said adjacent field motion ratio may be expressed as $|(A - B)/[(A + B)/2]|$, where B is the current field motion and A is the last field motion (A).

19. The film detector according to claim 17 or claim 18 further comprising a frame motion verifier receiving a frame motion signal indicating motion from the same parity field to the next same parity field, the frame motion verifier interrupting receipt of the field motion signal by said accumulator in the absence of frame motion coincident with field motion.

20. The film detector according to claim 17 or claim 19 wherein said pattern detector also receives an edit occurrence signal, said pattern detector indicating the absence of said predetermined pattern upon receipt of an affirmative edit occurrence signal.

In the Drawings

Please substitute the attached Figure 12 for the Figure 12 as originally filed.

Remarks

This is an amendment preliminary to the examination of the application.

The amendments to pages 12, 20, and 24 are clerical and/or grammatical in nature. The amendments at pages 21 and 25 insert words clearly implied by the original text that were inadvertently omitted. The amendment at page 26 is to correct an obvious error, thereby conforming the table entry to the drawings and remainder of the disclosure.

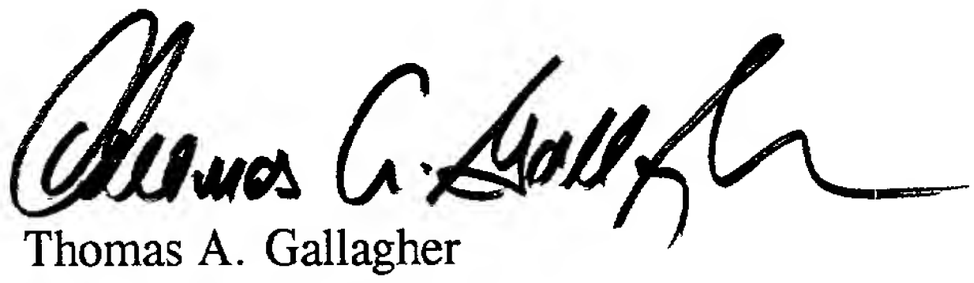
The newly added claims are intended to more precisely claim certain aspects of the present invention.

Figure 12 as originally filed does not conform to the specification. See, for example, page 22, lines 4 onward. The substitute Figure 12 conforms to the specification as filed. Thus, no new matter is involved.

An Information Disclosure Statement was filed in the first prior nonprovisional application. A copy of that Statement with forms PTOL-1449 are attached to this Preliminary Amendment. It is believed that applicant need not submit additional copies of the cited references for the information cited to be considered. See MPEP 609: "Likewise the examiner will consider information cited or submitted to the Office in a parent application when examining a continuation or continuation-in-part application which is not a file wrapper continuing application, and a list of the information need not be submitted in the continuing

application unless applicant desires the information to be printed on the patent.

Respectfully Submitted,



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Abstract of the Disclosure

A television line doubler (interlaced to progressive scan converter) incorporating the following aspects — an improved field motion detector which does not treat low frequency vertical transitions as motion; a frame motion detector having an improved ability to differentiate motion from subcarrier signal components; a sawtooth artifact detector; a sawtooth artifact detector in combination with a film pattern detector, such that the artifact detector can take the film pattern detector out of film mode earlier than it would if it only were responsive to a break in the film pattern; tandem field motion detectors; an improved field based film detector; film pattern detectors and motion detectors used therewith which operate by performing end-of-field calculations; the combination of a field motion detector and a frame motion detector such that the frame motion detector provides a motion signal used as a verification by the field motion detector; an improved NTSC film detector requiring a minimum number of NTSC film pattern sequences; and an improved PAL film detector employing a minimum motion threshold detector.